Cristie Bare Machine Recovery

User Guide

For Linux

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Version 7.2.1

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1 Document Conventions

The following typographical conventions are used throughout this guide:

`/etc/passwd`	represents command-line commands, options, parameters, directory names and filenames
Next >	used to signify clickable buttons on a GUI dialogue
Note:	describes something of importance related to the current topic

2 Introduction

Cristie Bare Machine Recovery for TSM (TBMR) provides disaster recovery capability for Tivoli Storage Manager for Linux.

It is possible to recover the original system to the same or dissimilar hardware. To protect a system, backups can be taken periodically, along with configuration information, which includes details of hard disks, network interfaces, etc.

This Guide shows the user how to save system configuration information, backup and recover a Linux machine using TBMR. More detailed information is available from `man` pages for the TBMR components. The `man` pages are available after installation of TBMR.

This guide is for TBMR for Linux version 7.2.1 only.

> ***Note: TBMR can only be used in conjunction with TSM.***

This guide describes how to:

- Save Configuration data using `tbmrcfg`
- Configure and run your TSM Client backup
- Perform a Disaster Recovery

2.1 Limitations

TBMR for Linux does NOT support:

- Platforms other than Intel.
- Multi-boot operating systems
- Recovery of files that are being written to at the time of backup.

2.2 Further Information

Further information and advice on using TBMR may be found in the **Cristie Knowledge Base** at:

http://kb.cristie.com

See Also

About TBMR for Linux

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3 System Requirements

TBMR for Linux can be installed on a x86, x86_64 or PPC Linux machine.

TBMR requires that TSM BA client version 5.5 or later is already installed.

A minimum memory of 1GB RAM is required for booting the recovery environment and running a recovery.

TBMR Version 7.2.1 supports the following Linux platforms:

- RedHat Enterprise 4.x to 6.5.
- SUSE 10.x to SUSE 11 SP3.

At the time of release the TSM Client versions supported are 5.5.0.6 to 7.1.1.0 inclusive.

At the time of release the TSM Server versions supported are 5.5.x.x to 7.1.1.0 inclusive.

The TBMR installation is currently available in English only.

Before TBMR can be used it must also be correctly licensed. Cristie provides a 30 day trial license with the product.

4 Supported Filesystems

TBMR Version 7.2.1 supports the following Linux filesystems:-

- ext2
- ext3
- ext4
- ReiserFS
- JFS
- XFS

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5 uEFI and MBR BIOS support

Note: For Linux, support is provided for conversion from uEFI to MBR BIOS

The recovery ISO is not uEFI enabled. Therefore a successful recovery requires a uEFI environment capable of booting the recovery ISO in MBR BIOS.

Physical machines

There are no special considerations that need to be made by the customer for physical uEFI machines.

All Cristie Bare Metal Recovery software handles the recreation of the uEFI and MSR (Microsoft System Reserved) partitions during the recovery of the physical machine, this is transparent to the user. When recovering a uEFI enabled OS you must recover to uEFI capable hardware.

When recovery is to a different machine, you may need to configure the uEFI boot Stanza in order to boot the recovered uEFI OS. Please refer to the Cristie Knowledgebase for further information on editing the boot Stanza.

Virtual machines

Important note: When using virtualisation software check the virtualisation software documentation to determine if uEFI is supported.

To recover to uEFI take the following steps:

1. Once you have a “Recovery Success” message from the TBMR recovery, click Reboot, and then shutdown the recovered VM.

2. Edit the Options of the Virtual Machine, and change the BIOS to be uEFI (instead of the standard MBR BIOS).

3. Once the BIOS has been changed, you will need to boot the VM into the uEFI BIOS using the VM boot options.

4. When recovery is to a different machine, you may need to configure the uEFI boot Stanza in order to boot the recovered uEFI OS. Please refer to the Cristie Knowledgebase for further information on editing the boot Stanza.

Once the above steps have been performed, your recovered uEFI OS will boot in your virtualisation software.

6 Using TBMR For Disaster Recovery

This section describes the steps involved in using Tivoli Storage Manager in conjunction with TBMR for disaster recovery.

This description assumes that the Tivoli Storage Manager client software has already been installed correctly.

To ensure your system is protected observe the following steps:

1. Install TBMR on the system you wish to protect.

2. Use the `tbmrcfg` program to capture and store the configuration of the system.

3. Use the TSM BA Client to backup the system to your TSM server.

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7 Tivoli Storage Manager Client Backup

This section details how to setup a Backup Location.

Please see the following topics:

Setup TSM BA Client

Saving the System Configuration

TBMRCFG

7.1 Setup TSM BA Client

If the backup is to be written using TSM BA client, the BA client `dsm.sys` file should be configured.

The default location for TSM BA client option file is:

```
/opt/tivoli/tsm/client/ba/bin/dsm.sys
```

This file should be edited to point to the TSM server to be used:

```
SErvername server_a
      COMMmethod         TCPip
      TCPPort            1500
      TCPServeraddress   10.2.1.20
```

The TSM BA client should be configured to backup all files which are required for OS recovery. By default, the `/dev` directory is **not** backed up. To make sure this is backed up, the following line should be added to the `dsm.sys` file:

```
virtualmountpoint /dev
```

This will create a separate filespace for `/dev` which will be restored by the recovery environment.

7.2 Saving the System Configuration

Configuration is now always saved to **/TBMRCFG** - it can't be saved anywhere else. This guarantees it is always stored in the backup.

When saving the configuration information to the backup location, this must be done **before** the backup is run.

To save the configuration information for each machine, the supplied command line program `tbmrcfg` is used. It is recommended that this is run prior to running each backup to ensure the configuration is up to date.

7.3 TBMRCFG

To use the command line configuration saving program, type `tbmrcfg` followed by the required options.

The available options of `tbmrcfg` can be shown using:

```
tbmrcfg --help
```

Some examples are shown here:

To save configuration information from a machine that boots using *grub* installed on `/dev/sda` to the backup location, use:

```
tbmrcfg -b grub -d /dev/sda
```

To save configuration information from a machine that boots using *grub* installed on `/dev/hda`, use:

```
tbmrcfg -b grub -d /dev/hda
```

There is a full manual page for *tbmrcfg* available by typing `man tbmrcfg`.

7.4 Housekeeping

In order to ensure that you can recover to the latest version of the operating system that was installed on your Linux machine, you must ensure that a TSM incremental backup is performed every time the operating system files change.

This is not always possible, so **Cristie Software Ltd.** recommend that the TSM incremental backup be performed regularly. However, you should choose a period which reflects the rate of change in your own organisation. Although the configuration data will change less frequently than the operating system, it is a wise precaution to update this regularly. This can be achieved by creating a cron job for your schedule or using the TSM Scheduler.

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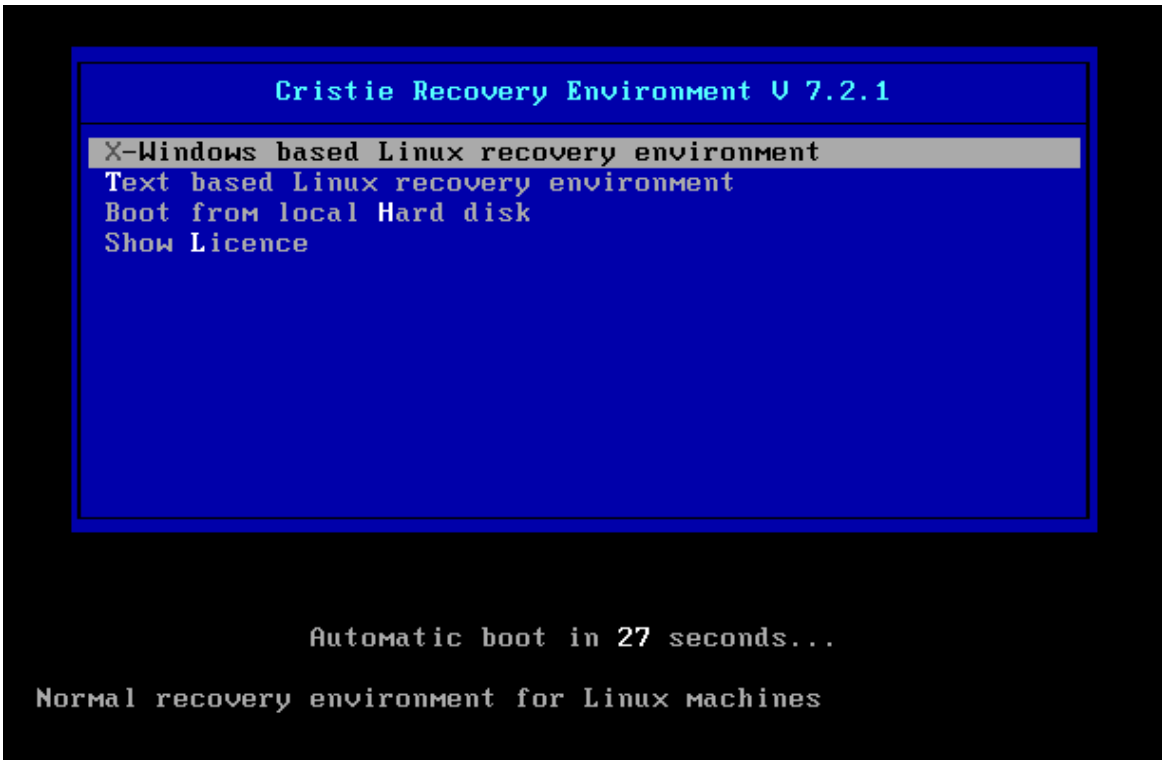
8 Performing a Recovery

When a machine has crashed, it can be recovered using the TBMR bootable CD-ROM. This is the same CD from which you installed the software. You should ensure your machine's BIOS is set up to boot from CD-ROM.

The process encompasses the following stages:

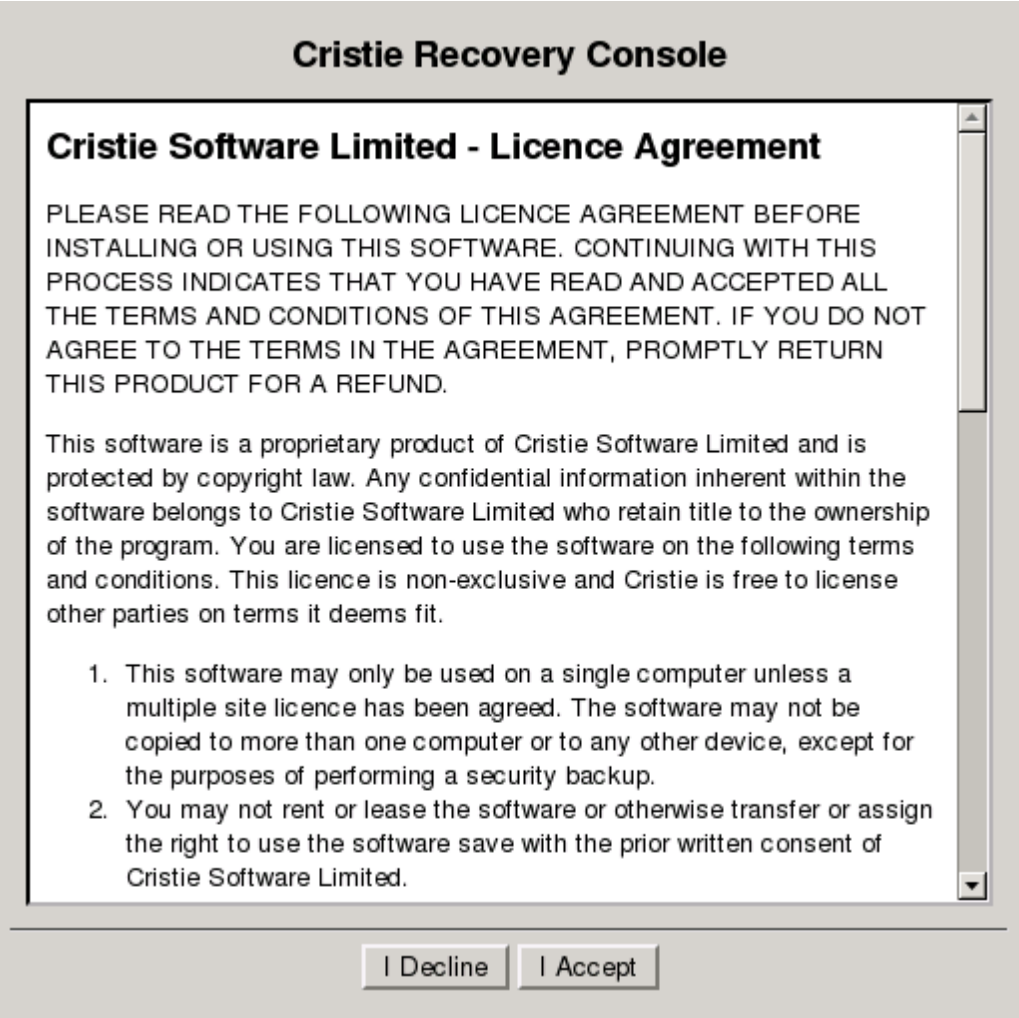
- **Boot** into Recovery environment and configure as required
- **Read** Configuration Data from your backup
- **Restore** Files from your backup
- **Load** additional drivers (if necessary)
- **Reboot** into recovered OS

Boot the machine using the TBMR bootable CD ROM or ISO. You will be presented with the screen below:


Cristie Recovery Environment V 7.2.1
X-Windows based Linux recovery environment
Text based Linux recovery environment
Boot from local Hard disk
Show Licence
Automatic boot in 27 seconds...
Normal recovery environment for Linux machines

Cristie recommend that you choose the graphical X-Windows recovery environment mode which loads the **Cristie Recovery Console** (CRC).

You will be presented with the **Licence** screen. Click I Accept if you agree with the TBMR licencing terms.


Cristie Recovery Console
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2. You may not rent or lease the software or otherwise transfer or assign the right to use the software save with the prior written consent of Cristie Software Limited.
I Decline
I Accept

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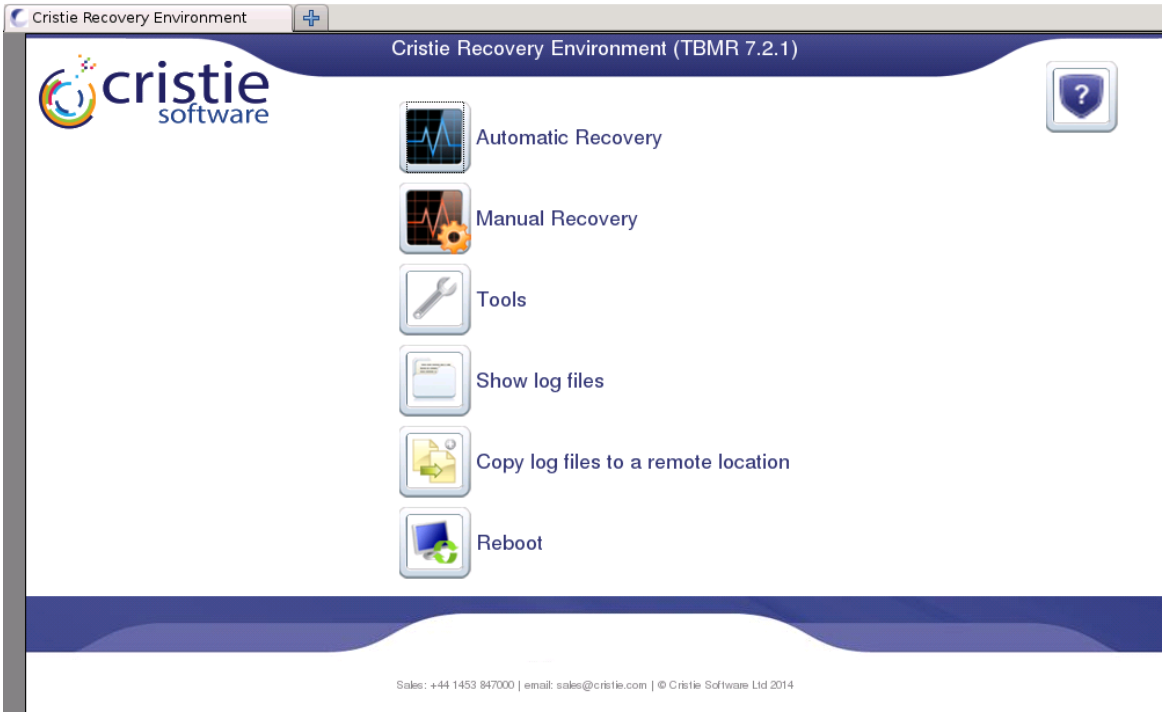
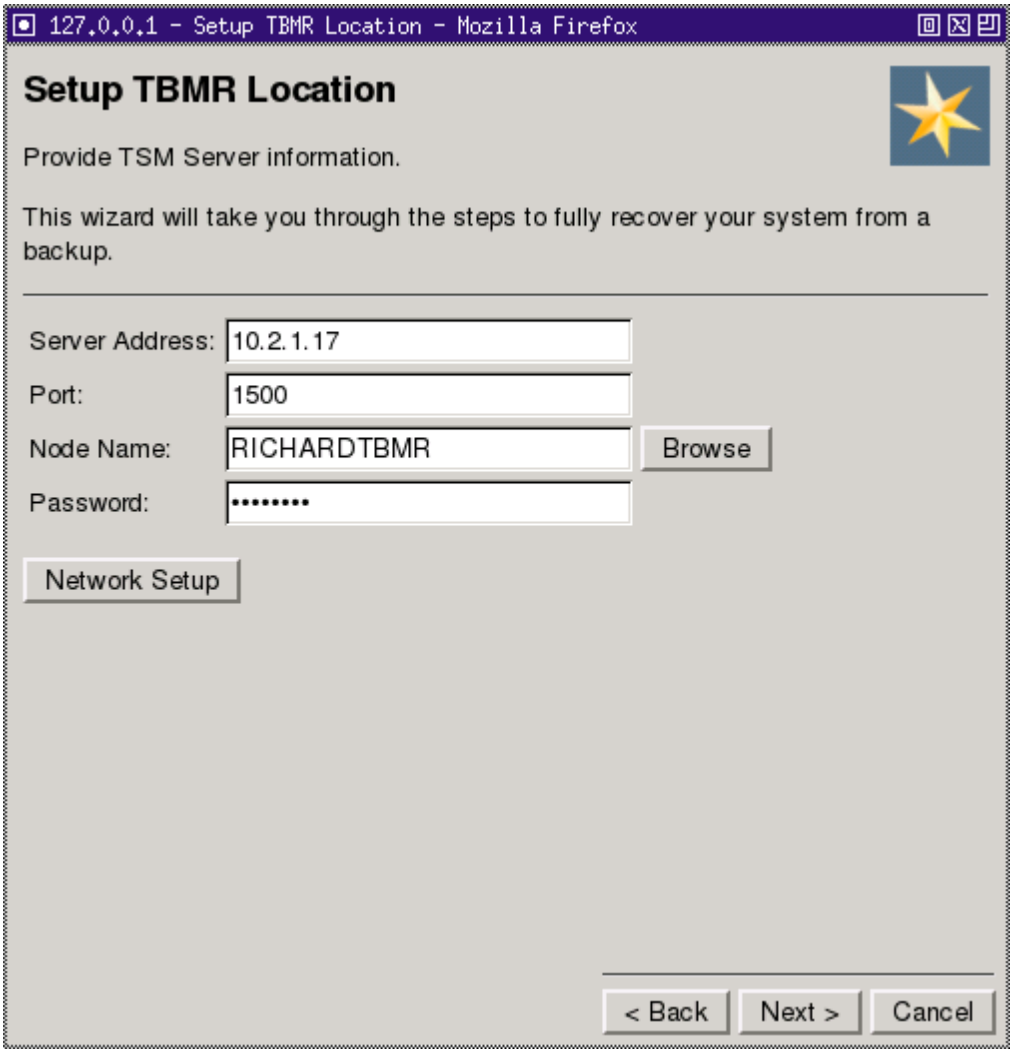
You will then see the **Recovery Console** main menu:



Cristie recommends using the **Auto Recovery Wizard** option from the **Recovery Console** main menu.

This will then display the **Setup TBMR Location** dialogue box, where you can specify the TSM Server information.



If required, it is possible to view the nodes on the server by clicking the Browse button.

(Note: You need to enter the administrative details for the TSM Server into the Node Name and Password fields to achieve this)

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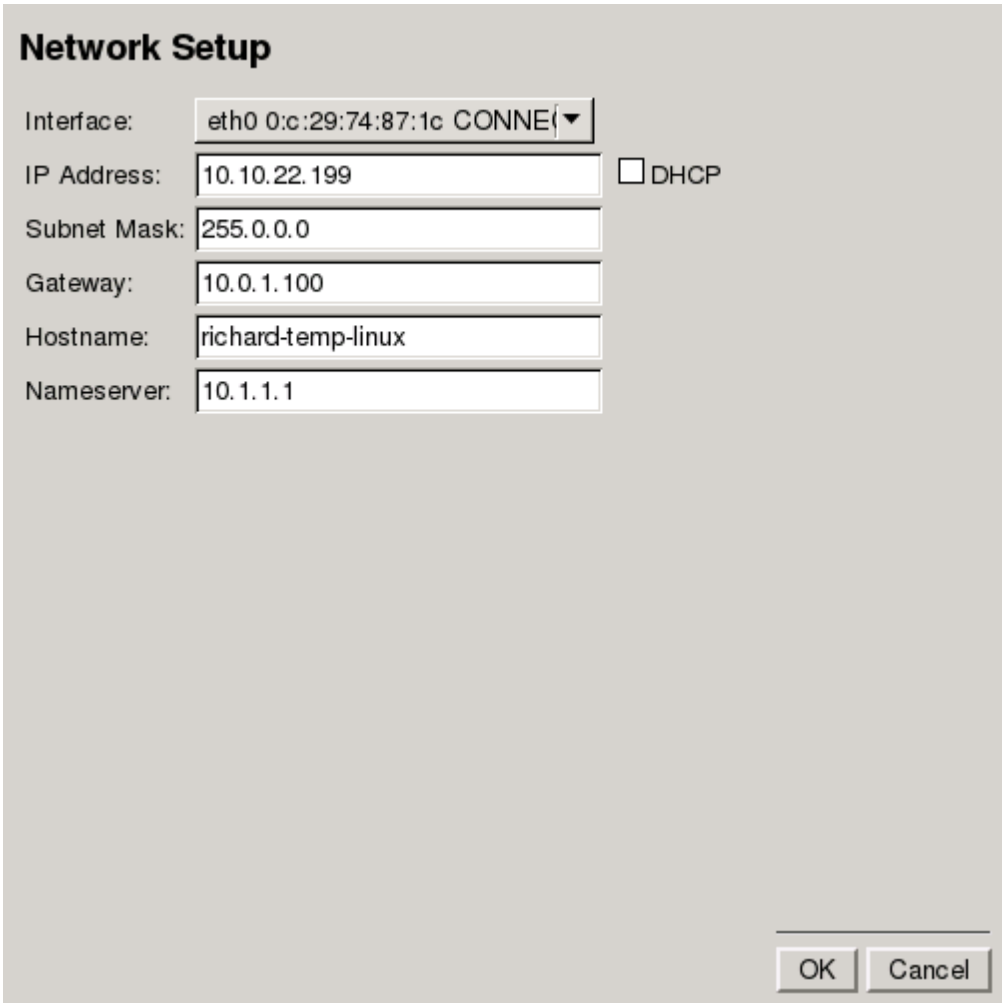
Select the required node or Close to return to the **Setup TBMR Location** dialogue.

If it is required to configure the network settings, click the Network Settings button. Enter your desired network settings.



Select OK to save your changes.
The Start Network screen will then display the network changes being implemented.

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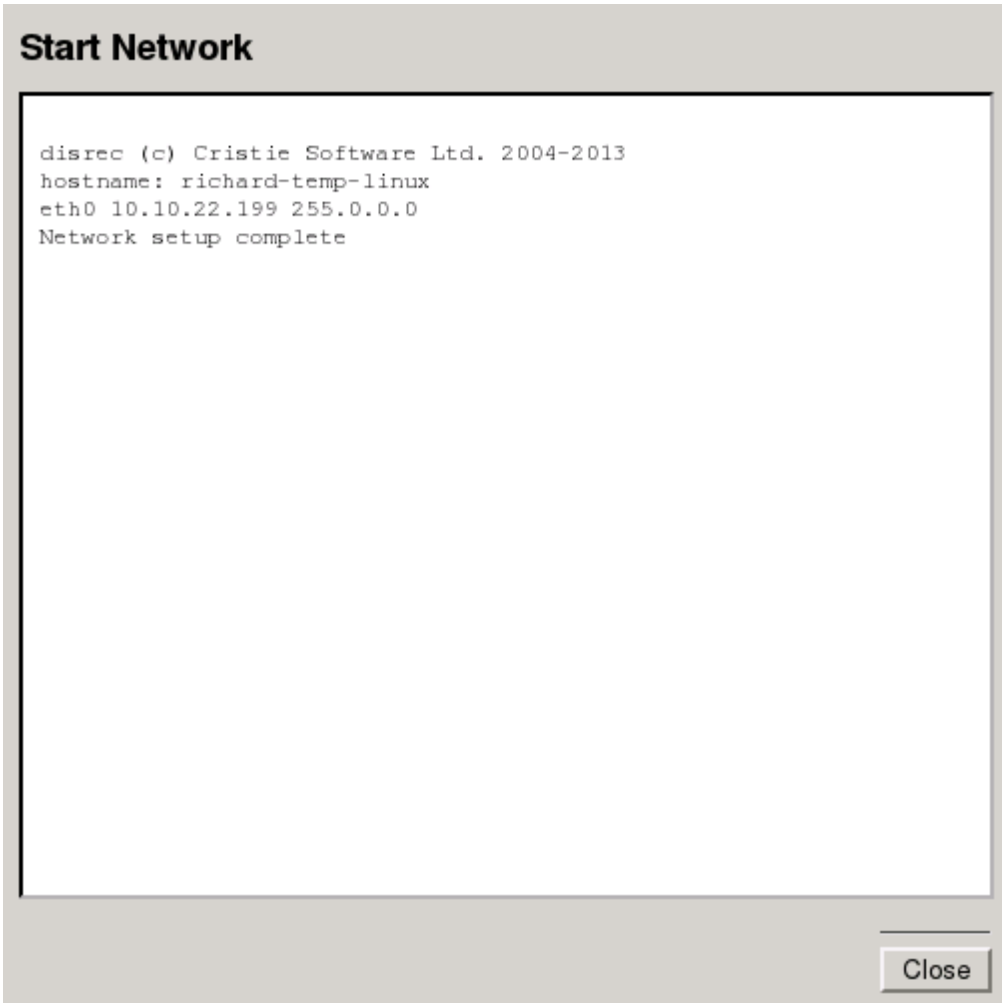
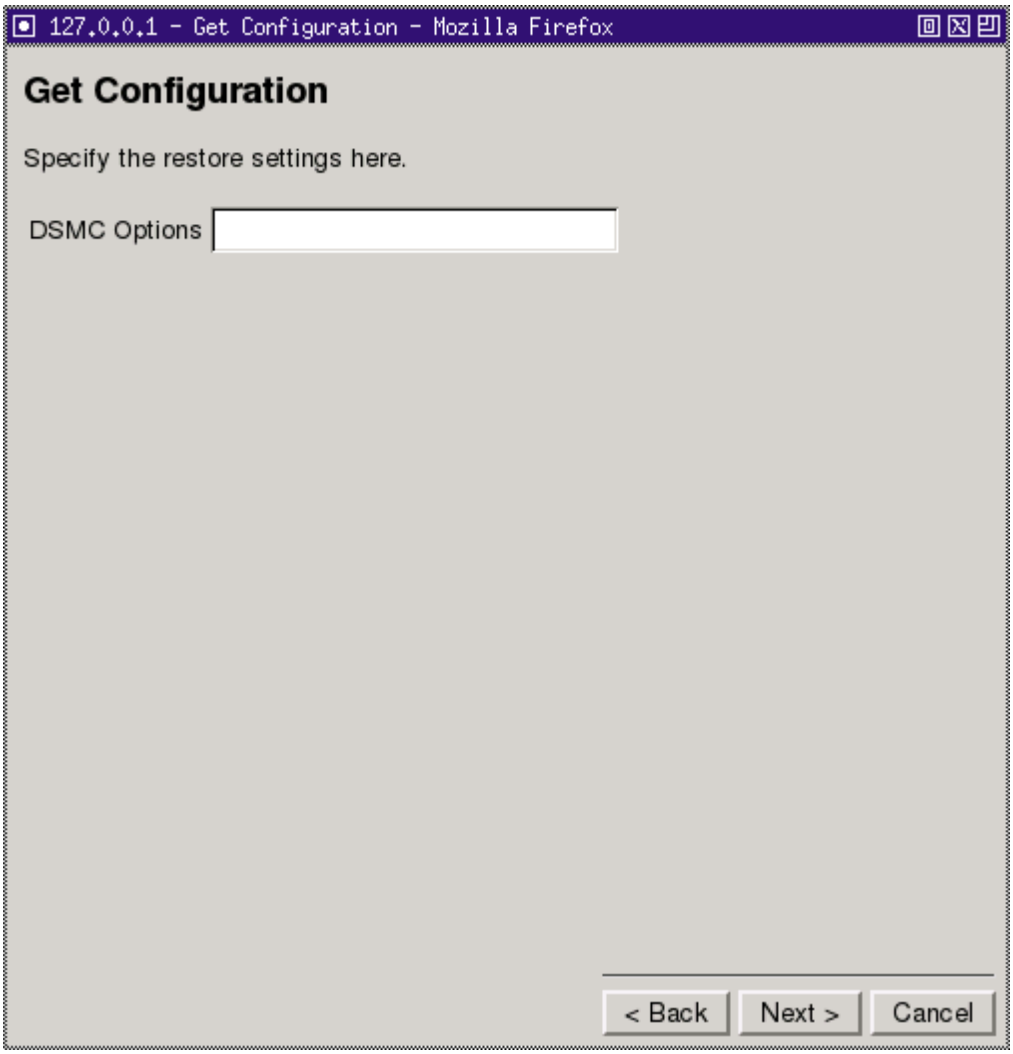


Click Close to return to the **Setup TBMR Location Wizard**. Select Next > to proceed.

Upon returning to the **Setup TBMR Location** Wizard, click the Next > button to proceed with the recovery.

Next the **Restore Configuration** dialogue will be shown.



Typically, nothing needs to be entered under DSMC options. If you do need to enter any parameters, it will probably be the standard TSM options.Any parameters entered will be passed to DSMC. Please consult your TSM User Manual for details.

> ***Note: for a list of these parameters and how to use them you should consult the relevant TSM User Guide.***

Click Next> to continue.

This will then restore the configuration from the backup.

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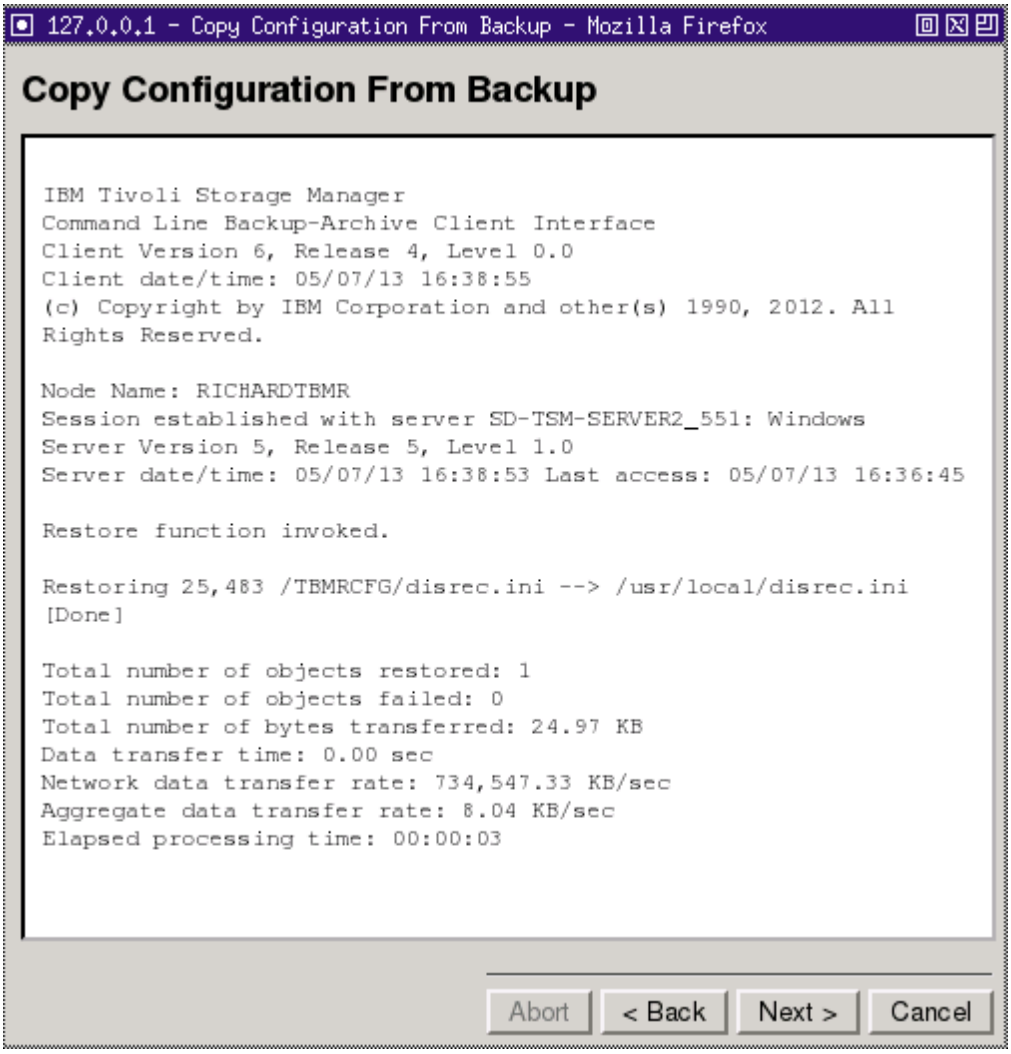
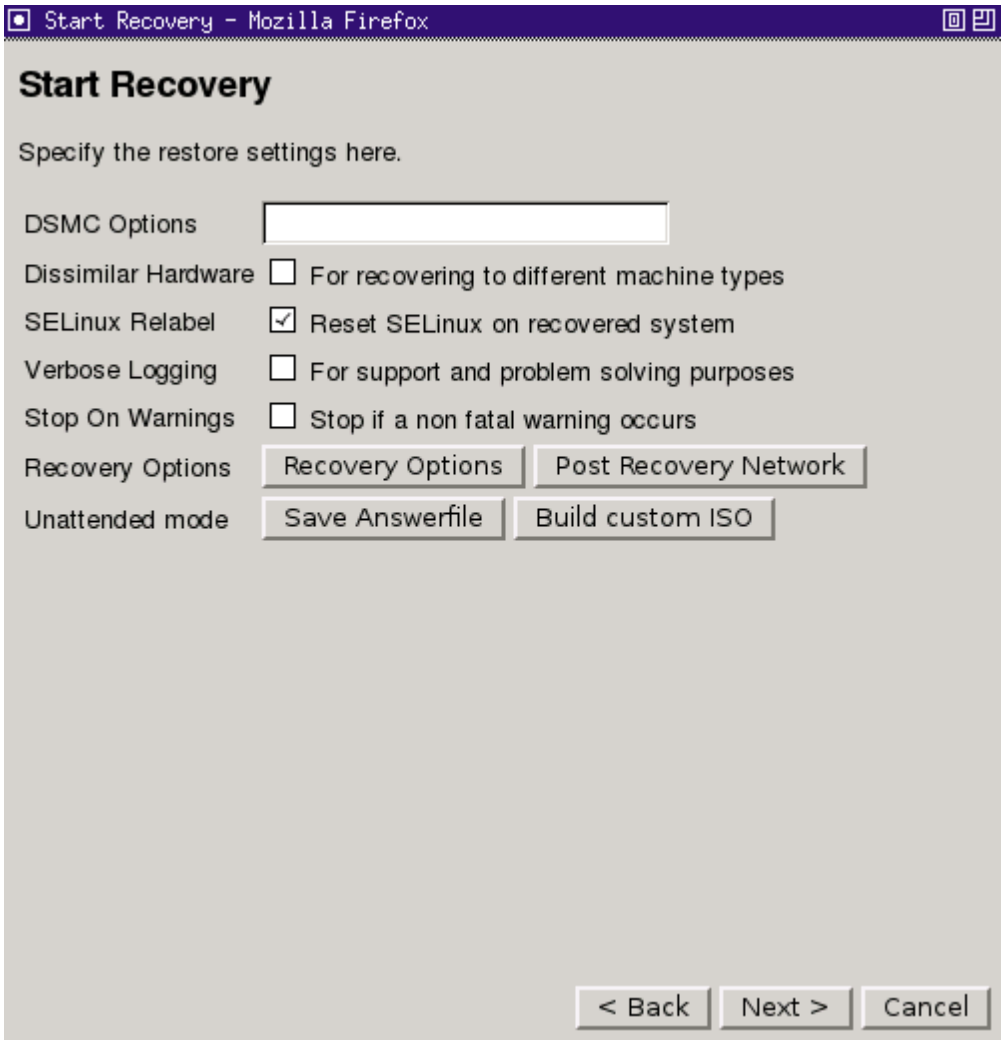

127.0.0.1 - Copy Configuration From Backup - Mozilla Firefox
Copy Configuration From Backup
IBM Tivoli Storage Manager
Command Line Backup-Archive Client Interface
Client Version 6, Release 4, Level 0.0
Client date/time: 05/07/13 16:38:55
(c) Copyright by IBM Corporation and other(s) 1990, 2012. All
Rights Reserved.
Node Name: RICHARDTBMR
Session established with server SD-TSM-SERVER2_551: Windows
Server Version 5, Release 5, Level 1.0
Server date/time: 05/07/13 16:38:53 Last access: 05/07/13 16:36:45
Restore function invoked.
Restoring 25,483 /TBMRCFG/disrec.ini --> /usr/local/disrec.ini
[Done]
Total number of objects restored: 1
Total number of objects failed: 0
Total number of bytes transferred: 24.97 KB
Data transfer time: 0.00 sec
Network data transfer rate: 734,547.33 KB/sec
Aggregate data transfer rate: 8.04 KB/sec
Elapsed processing time: 00:00:03
Abort
< Back
Next >
Cancel

Click Next> to continue to the **Start Recovery** phase.



If you are **not** recovering to dissimilar hardware, you must **un-check** the box for **Dissimilar Hardware Support**. Not doing so can cause problems when restoring to similar hardware.

Ensure that you un-tick the SELinux Relabel option, to ensure that your original SELinux settings are maintained. Only leave this box ticked, if you know that your SELinux settings need to be reset. If you wish, you may customise your disk layout by clicking on the **Recovery Options** button.

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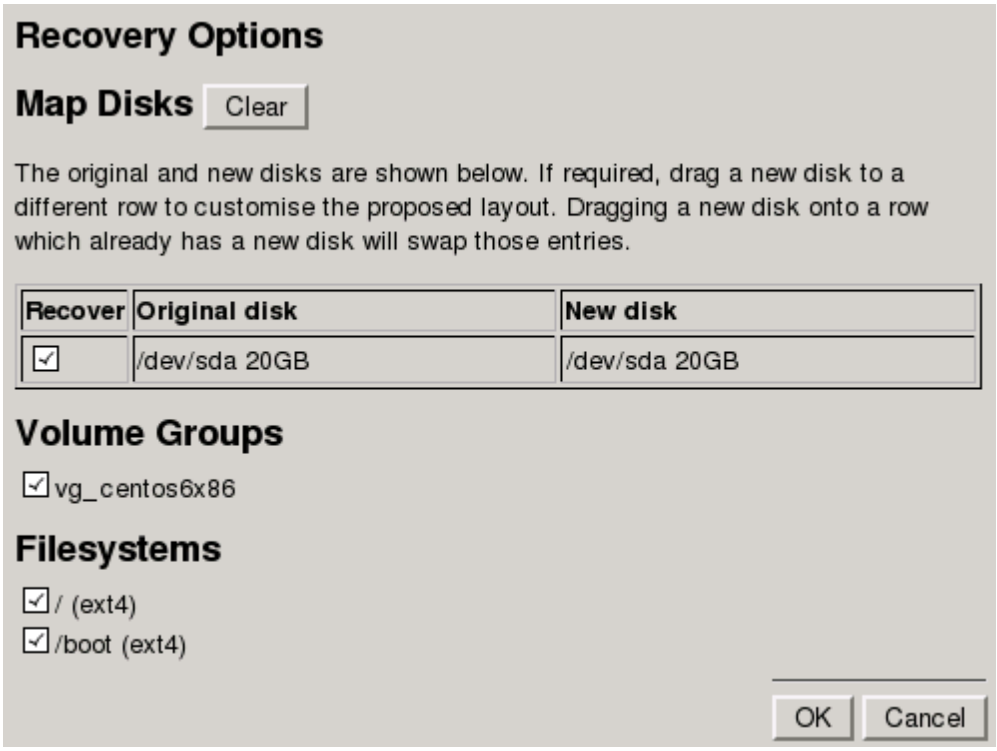
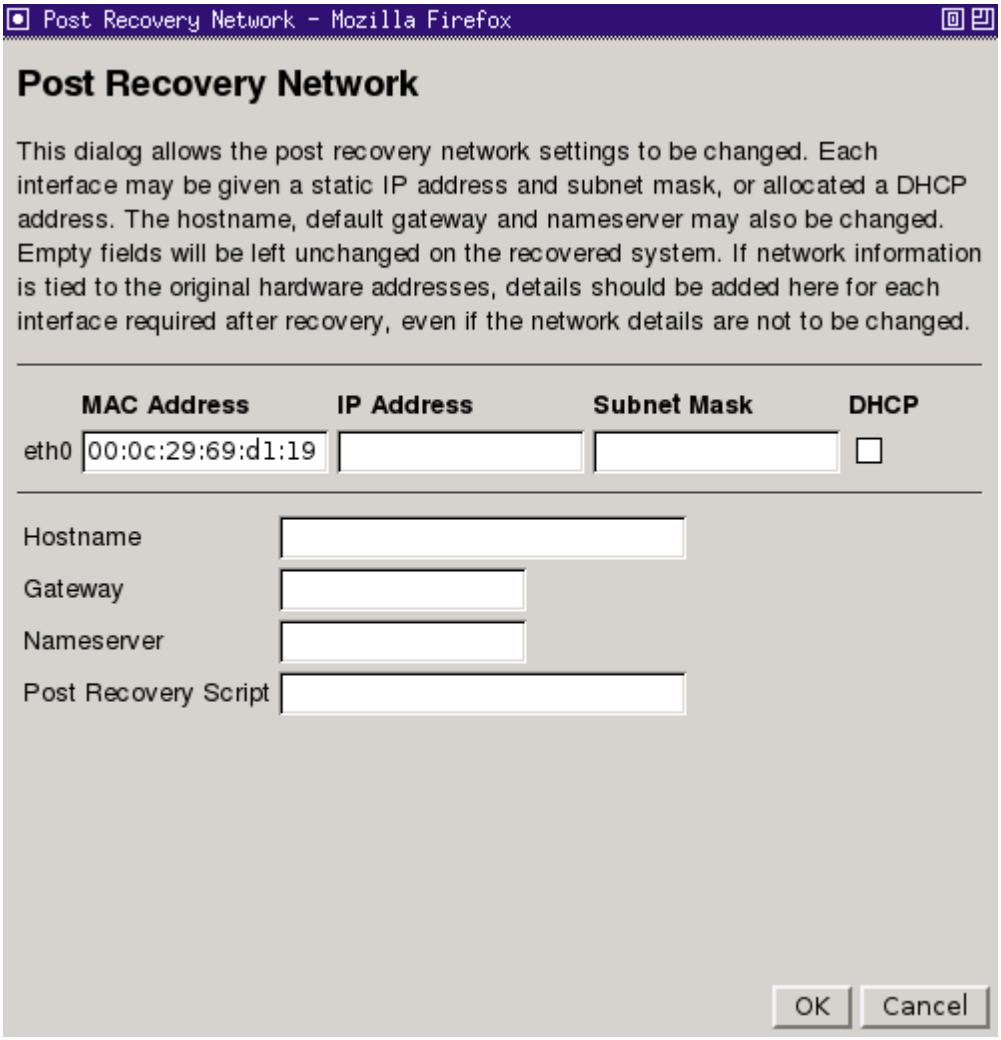

Recovery Options
Map Disks
Clear
The original and new disks are shown below. If required, drag a new disk to a different row to customise the proposed layout. Dragging a new disk onto a row which already has a new disk will swap those entries.
Recover
Original disk
New disk
/dev/sda 20GB
/dev/sda 20GB
Volume Groups
vg_centos6x86
Filesystems
/ (ext4)
/boot (ext4)
OK
Cancel

If you wish to change the Network Settings in advance of recovery, select **Post Recovery Network**: This option is only available for SLES11 and Red Hat 6.


Post Recovery Network - Mozilla Firefox
Post Recovery Network
This dialog allows the post recovery network settings to be changed. Each interface may be given a static IP address and subnet mask, or allocated a DHCP address. The hostname, default gateway and nameserver may also be changed. Empty fields will be left unchanged on the recovered system. If network information is tied to the original hardware addresses, details should be added here for each interface required after recovery, even if the network details are not to be changed.
MAC Address
IP Address
Subnet Mask
DHCP
eth0
00:0c:29:69:d1:19
Hostname
Gateway
Nameserver
Post Recovery Script
OK
Cancel

Your recovery settings can be saved save as an Answerfile to a network share.

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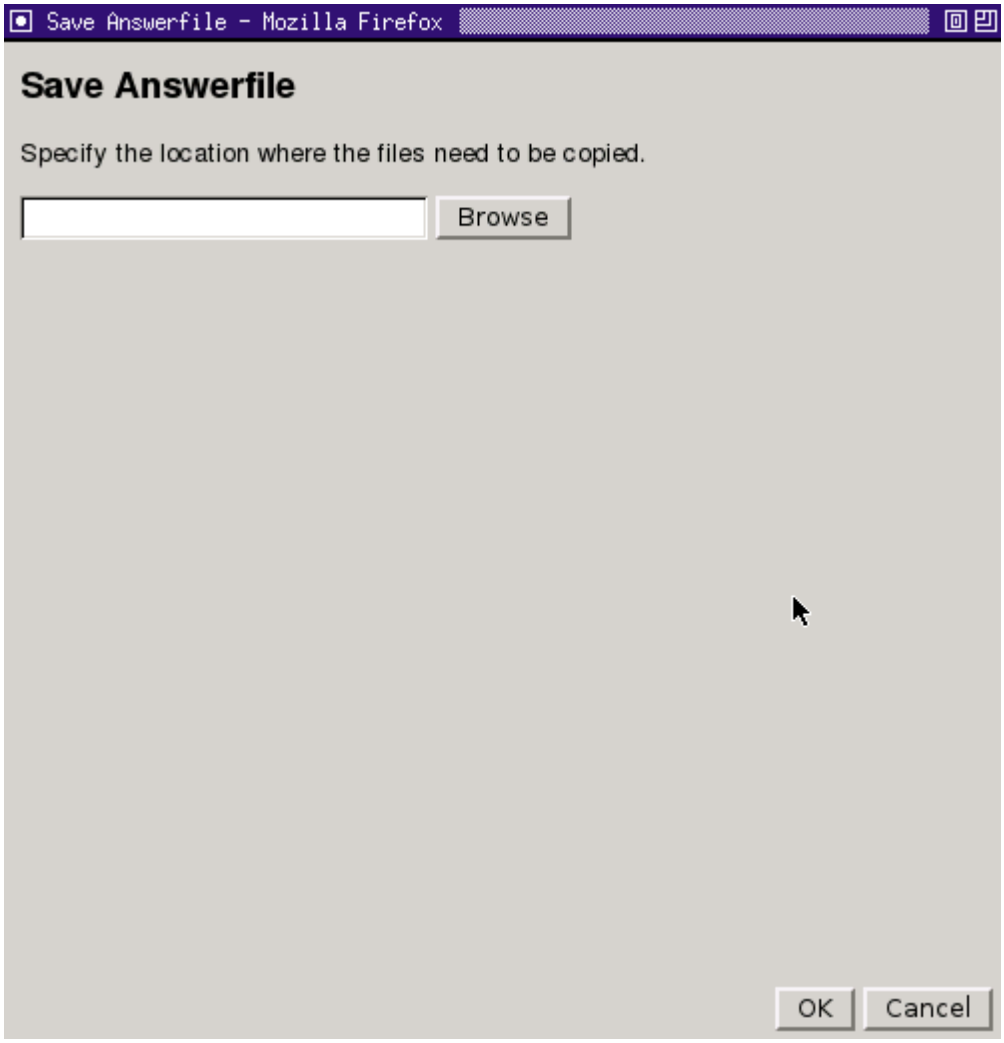
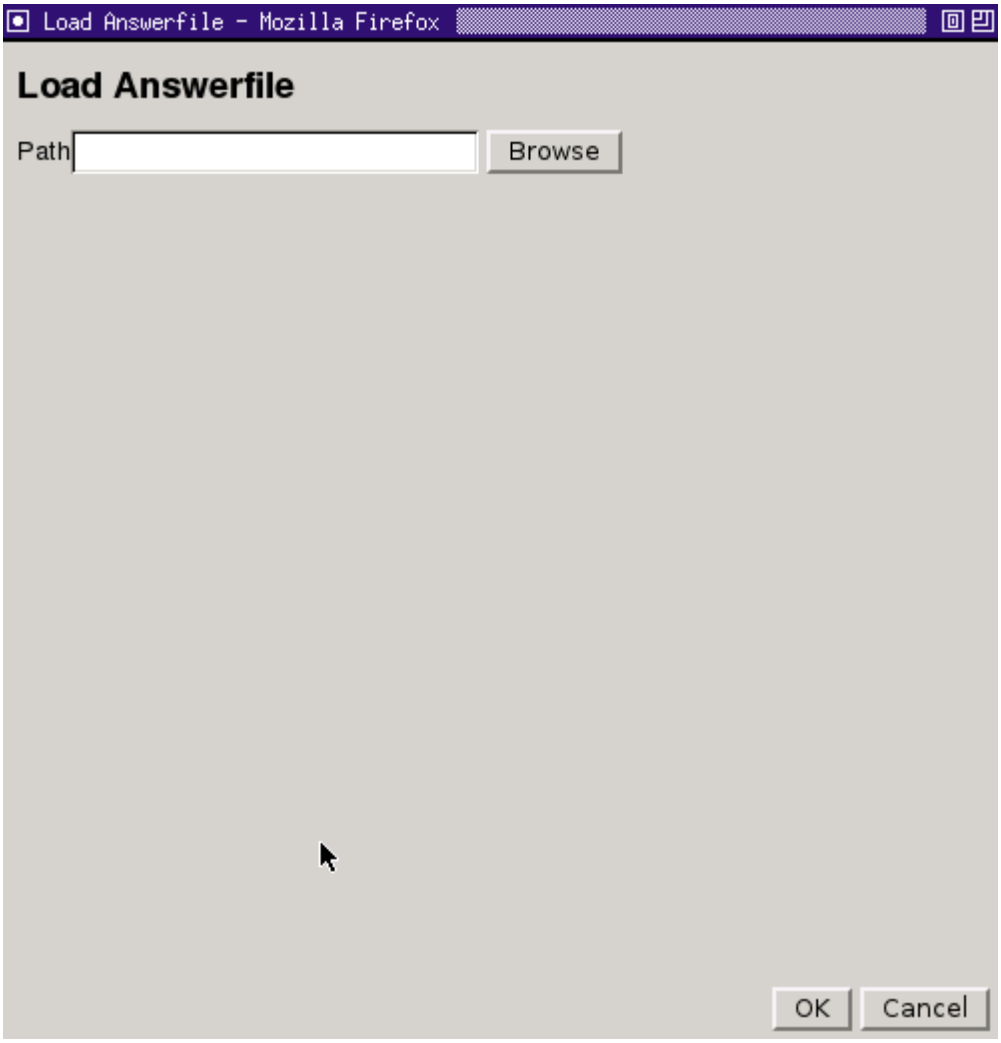


Previously saved Answerfile can be restored from **Tools** and **Load Answer File**.



When you are satisfied that all options are correct, click OK to confirm and return to the **Start Recovery** dialogue.

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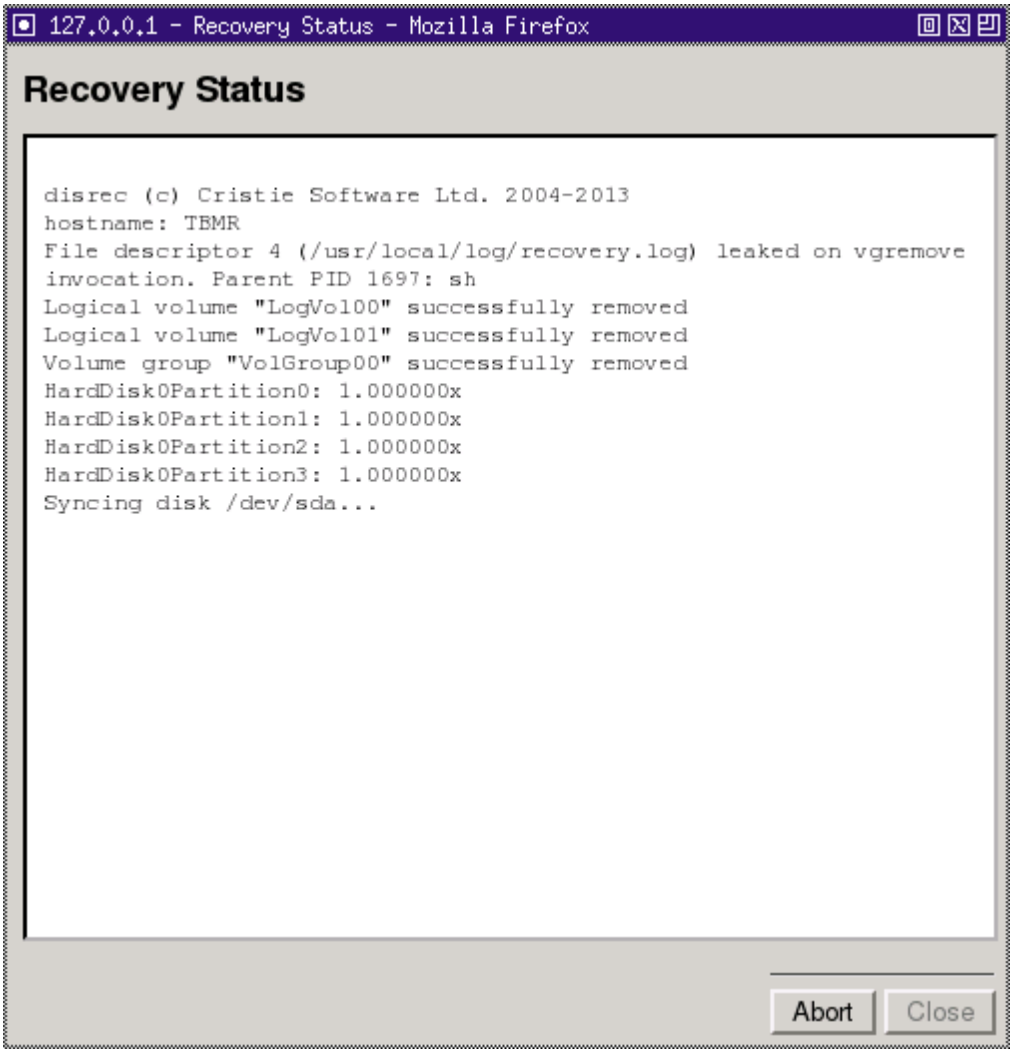
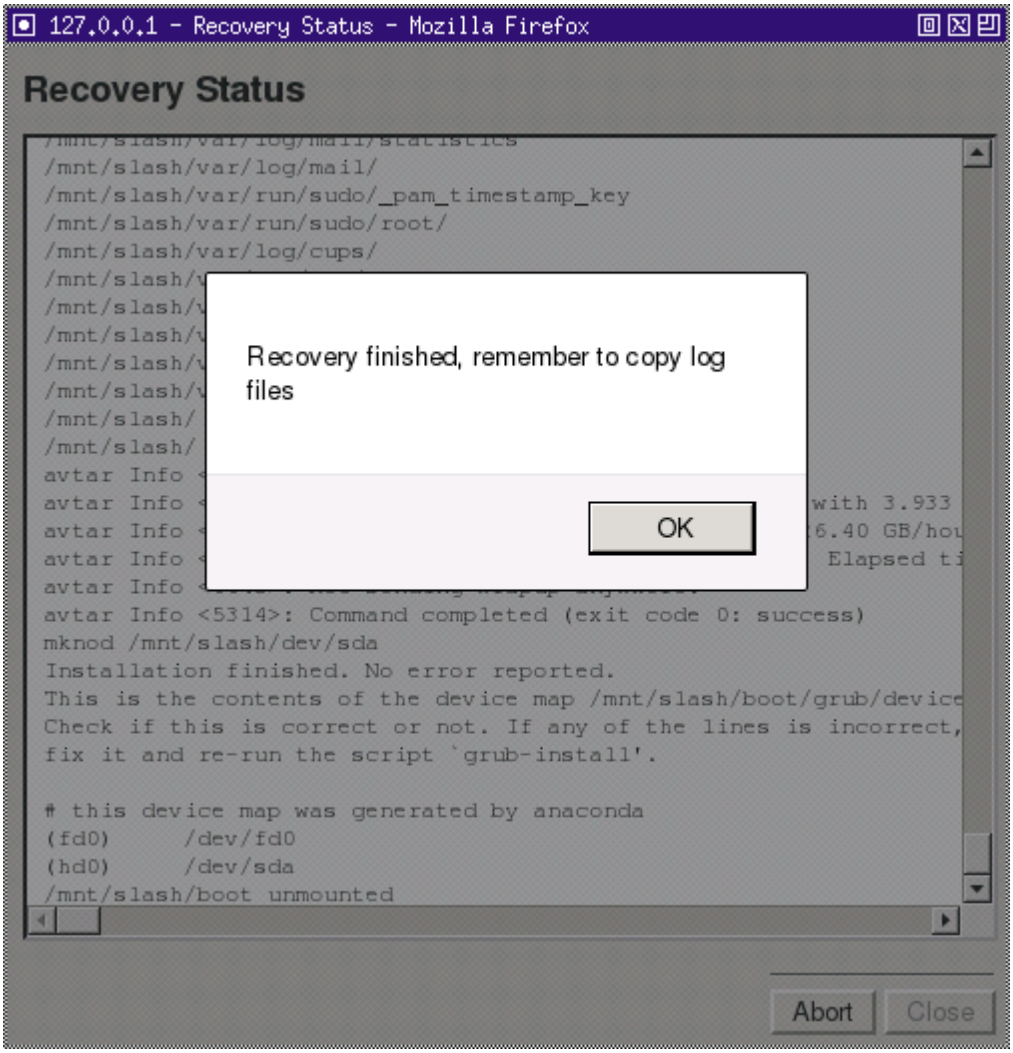
Finally select Next> to start the recovery, which will begin with a dialog like this:



The completion of the recovery is signified with a pop-up box like this:


127.0.0.1 - Recovery Status - Mozilla Firefox
Recovery Status
/mnt/slash/var/log/mail/
/mnt/slash/var/run/sudo/_pam_timestamp_key
/mnt/slash/var/run/sudo/root/
/mnt/slash/var/log/cups/
Recovery finished, remember to copy log files
OK
avtar Info <5314>: Command completed (exit code 0: success)
mknod /mnt/slash/dev/sda
Installation finished. No error reported.
This is the contents of the device map /mnt/slash/boot/grub/device
Check if this is correct or not. If any of the lines is incorrect,
fix it and re-run the script `grub-install'.
this device map was generated by anaconda
(fd0) /dev/fd0
(hd0) /dev/sda
/mnt/slash/boot unmounted
Abort
Close

Cristie recommends that the log files are always saved. If the machine fails to boot after the restore Cristie Support will require copies of the log files to diagnose any problems. Details on how to save log files are described in the section Copy Log Files.

> ***Note: if you are recovering to dissimilar hardware: TBMR will find the required module(s) automatically. Normally this will happen with no further user intervention.***

Click OK to close the pop-up box, followed by the Close button to return to the Main Menu.

Finally select **Reboot** from the Main Menu to boot the restored machine, if post recovery options are not required.

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9 Post Recovery Options

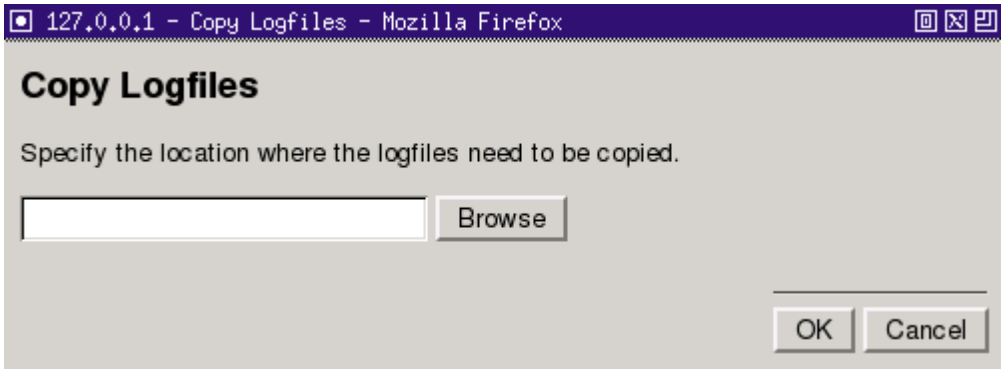
After performing a recovery, it is possible to undertake the following actions:

- Copy Log Files (Cristie recommends that this action is always undertaken after a recovery)
- View Log Files

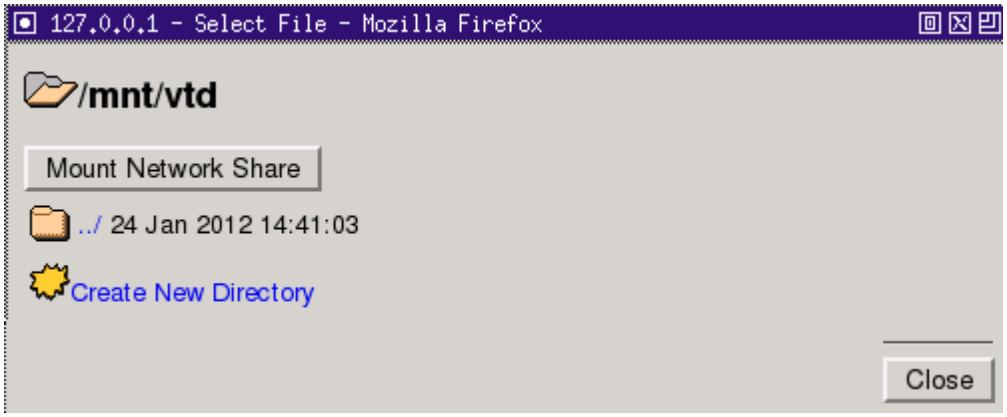
9.1 Copy Log Files

Select the icon from the **Cristie Recovery Console** main menu.

Click Browse to select a location to copy the log files to.



Here you will have to option to mount a network drive.



Ensure this is a location which can be easily accessed in case there is a need to email the log files to Cristie for support purposes.

> ***Note: log files are essential if you require support from Cristie. They detail exactly what has happened during the recovery on your system. Without them, it is very difficult for Cristie to offer meaningful support.***

9.2 View Log Files

To view log files, select the icon from the Main Menu. This will display the list of logfiles:

Click on the log you wish to view. Check the summary information at the bottom of the recovery status report for any errors.

Click Close to finish.

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10 Cristie Technical Support

If you have any queries or problems concerning your Cristie Bare Machine Recovery product, please contact **Cristie Technical Support**. To assist us in helping with your enquiry, make sure you have the following information available for the person dealing with your call:

- TBMR Version Number
- Installed OS type and version
- Any error message information (if appropriate)
- Description of when the error occurs
- All Cristie log files relating to the source or recovery machine. This is very important to help us provide a quick diagnosis of your problem

Contact Numbers - Cristie Software (UK) Limited

Technical Support	+44 (0) 1453 847 009
Toll-Free US Number	1-866-TEC-CBMR (1-866-832-2267)
Sales Enquiries	+44 (0) 1453 847 000
Email	cbmr@cristie.com
Web	www.cristie.com

Support Hours

05:00 to 17:00 Eastern Standard Time (EST) Monday to Friday

Out-of-Hours support available to customers with a valid Support Agreement - Severity 1 issues* only

UK Bank Holidays** classed as Out-of-Hours - Severity 1 issues only.

Severity 1 issues are defined as: a production server failure, cannot perform recovery or actual loss of data occurring.

****For details on dates of UK Bank Holidays, please see www.cristie.com/support/***

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